

an estimated merger-related price increase of 7.3% for Sprint which is quite close to my previous prediction of a price increase of 8.9% (§ 24). Thus, changing the AT&T price elasticity demonstrates that my model results are not especially sensitive to the AT&T elasticity estimate and that significant consumer harm would occur with the merger.

9. Drs. Besen and Brenner also claim that the prices I use in my econometric analysis may be inaccurate, which could create problems (pp. 44-46), and that the model assumes that consumers respond fully to changes in prices within a single month (pp. 42-44). They are wrong in both of their claims. The first stage of the model uses instrumental variables for prices, so that I use a (probability) weighted average of prices that a given carrier's customers pay as the price instrument in the carrier choice equation. Thus, the model has consumers making their carrier choice based on the actual prices observed in the market. The use of instrumental variables will remove most (or all) potential errors in a variable problem. Furthermore, because a probability distribution exists for each customer choice, some customers will not switch the first month after a price change, but only in succeeding months when other customers have already switched. Thus, my model does not assume that consumers respond fully to changes in prices within a single month. It predicts a gradual response as more consumers switch to the new price offerings.

10. Furthermore, the model does not assume that every consumer re-evaluates his carrier choice each month, as Drs. Besen and Brenner claim (p. 43). Instead, inframarginal customers are likely to stick with their current carrier (captured by the carrier indicator variable), while marginal customers do re-evaluate. Because the

with G. Leonard & D. Zona, Annales, D'Economie et de Statistique 34 (1994), p. 174,

essential feature of discrete choice models is the probability distribution over different consumers, the models allow for differential responses across consumers.

11. Thus, the model allows consumers to react to new prices set by a carrier over a number of months rather than instantaneously, as Drs. Besen and Brenner incorrectly claim (p. 43). At first, the marginal (most price sensitive) customers switch, but over time the margin changes to less price sensitive customers. The statistic techniques that I use (instrumental variables) also correctly treat this type of behavior, as I described above. If another carrier responds by changing its prices in the meantime, then its marginal customer as well as the marginal customers from other carriers will respond. Drs. Besen and Brenner have made the basic mistake of assuming that each consumer in the econometric model is identical, rather than understanding that a discrete choice model allows for a distribution of responses that differ across consumers.

12. With respect to pricing data, Drs. Besen and Brenner state that I may not use fixed monthly recurring charges in the discrete choice model (p. 44). Once again, they are wrong. Monthly fixed charges as well as separate prices for peak and off-peak calls are employed in the model. In terms of prices for carriers not chosen, which Drs. Besen and Brenner question (p. 45), the model uses the instrumental variables procedure described above. Thus, a (probability) weighted average of prices paid by consumers who actually choose that given carrier is used. I tested the results I reached by running the model with the prices from the “best plan” offered by other carriers and found similar results. While the model does not include certain promotions, as Drs. Besen and Brenner correctly state (pp. 46-47), most of these promotions are “lump sum” (e.g., a check for

equation (9).

switching) and will be estimated in the carrier indicator parameters. To the extent that customer choice is affected by monthly charges and prices, which the model estimates, the parameters of these effects can be used to estimate the effect of the merger. Moreover, the exclusion of these “lump sum” promotions actually tends to understate the degree to which consumers change carriers as a result of price differences and thus would tend to underestimate the price effects of the proposed merger.

13. Drs. Besen and Brenner state that the model I employ assumes that consumers first choose their carrier and then, depending on their carrier choice, decide how many minutes of long distance service to purchase (p. 42). The model makes no such assumption. Instead, it assumes that consumers make a single choice of carrier given their expected calling pattern. The model is estimated in two stages for econometric tractability reasons, but it does not assume that minutes of use depend on the carrier selection.⁴

14. Drs. Besen and Brenner question the statistical significance and economic significance of the model results (p. 49). They also state that I did not give the results for the multinomial logit models (p. 42). In terms of “economic significance” the results are certainly meaningful. The predicted price changes of 5% to 8% would cost consumers hundreds of million of dollars. However, to respond to their critique I re-estimated the predicted price impact of the merger using the model specification which is most favorable to the merging parties -- the multinomial logit model. That model assumes that

⁴ This model distinction is described in J. Hausman, “Individual Discount Rates and the Purchase and Utilization of Energy Using Durables,” *Bell Journal of Economics*, 1979; J. Dubin and D. McFadden, “An Econometric Analysis of Residential Electric Appliance Holdings and Consumption,” *Econometrica*, 1984; and J. Hausman, “The Econometrics

the generic carriers are equally good substitutes to MCI WorldCom and Sprint as MCI WorldCom and Sprint are to each other.⁵ Even using this model, the estimated price effect of the merger exceeds 5% (5.2%) for MCI WorldCom and Sprint customers, and the approximate t-statistic of the predicted change is 6.5, which demonstrates a high degree of statistical significance. Thus, even if generic carriers were equally good substitutes (contrary to what my model estimates demonstrate), a price increase costing consumers hundreds of millions of dollars would occur.⁶

15. The merger is likely to impose particularly great harm on consumers who make relatively few long distance calls. AT&T, MCI WorldCom, and Sprint impose minimum monthly charges of \$4-\$6 in many of their plans. This outcome is an example of “second degree” or volume based economic price discrimination. The Merger Guidelines recognize that a separate product market can exist in the presence of price discrimination (§ 1.12). A hypothetical monopolist could increase the minimum monthly charge without causing a decrease in the number of calls made so as to make the price increase unprofitable. Indeed, the marginal price of long distance calling would remain the same with only an extremely small (virtual) income effect arising from the increase in

of Nonlinear Budget Sets,” *Econometrica*, 1985, references which appeared in my original declaration.

⁵ In my first declaration the parameter estimates found that MCI and Sprint are each other’s closest substitutes (§ 23).

⁶ Drs. Besen and Brenner question the use of the PNR dataset (p. 47). I originally estimated the model on 1998 data (the most recent data then available) and subsequently used both 1997 and 1998 data because statistical tests demonstrated that similar results arose when both years were used. In terms of simulating the effects of the merger, I used end of year 1998 data.

the monthly charge.⁷ Thus, residential customers would not decrease their long distance call demand, except for an economically insignificant amount, so that the attempted price increase would be profitable and a separate low volume price discrimination market exists.⁸

16. In this low volume price discrimination market, the effects of a duopoly of AT&T and MCI WorldCom would likely be especially significant. The branded interexchange carriers have not passed along the entire amount of access charge decreases to their low volume residential customers; however, they have passed along fee increases (the e-rate) levied by the Commission on long distance services.⁹ AT&T and MCI WorldCom/Sprint could easily co-ordinate their actions to increase the minimum monthly charges to these low volume customers. Detection and punishment of potential cheating would be especially straightforward here as the minimum monthly charge is a publicly available number that receives significant attention. Thus, the price increases likely to confront low volume users are even greater than the price increases otherwise predicted by my model.

⁷ I have analyzed these situations in previous academic research papers. See my Fisher-Schulz lecture to the Econometric Society: J. Hausman, "The Econometrics of Nonlinear Budget Sets," Fisher-Shultz lecture for the Econometric Society, Dublin: 1982; Econometrica, 1985

⁸ For instance, suppose the monthly minimum charge rose by \$1. Assume that low volume customers have a monthly after tax income of \$800. Thus, the income effect would apply to a change in virtual income of 0.13% so that with an income elasticity of 1.0 (higher than found in most empirical studies), the change in long distance calling would be 0.13% or less.

⁹ See J. Hausman and H. Shelanski, "Economic Welfare and Telecommunications Welfare: The E-Rate Policy for Universal Service Subsidies," Yale Journal on Regulation, 1999.

17. It is noteworthy that Drs. Besen and Brenner do not respond to my analysis of the likely anti-competitive effect of the proposed merger on mass market bundles of services. In my first declaration (¶¶ 40-44), I analyzed why brand name is critical to the ability of firms to offer bundles of telecommunications services to mass market consumers, and that MCI WorldCom and Sprint, along with AT&T, are the only firms with established brand names and consumer recognition that currently can provide bundled offerings including long distance services.¹⁰ Drs. Besen and Brenner never analyze how emerging carriers will be able to compete since they do not have customer recognition, and to the best of my knowledge, offer little in terms of local service.¹¹ Given their very small sizes, almost all considerably less than 1% of the mass market, the emerging carriers are unlikely to have sufficient scale within a two year time horizon to be a competitive factor in the competition for bundled service offerings. Thus, if the merger were approved, AT&T and MCI WorldCom/Sprint would have a duopoly in bundled services, until the BOC received Section 271 approval. In many states where it is unlikely that the BOC will soon receive Section 271 approval, the merger will unquestionably have anti-competitive effects in bundled services.

II. Dr. Kelley and Mr. O'Dwyer on Wholesale Services

18. In my first declaration, I stated that MCI WorldCom and Sprint, along with AT&T, are the only long distance carriers with networks that have ubiquitous coverage

¹⁰ New York and Connecticut are exceptions since the ILEC is permitted to provide long distance.

¹¹ If Qwest's acquisition of U S West is consummated, Qwest will offer local exchange service in U S West's territory, but will not be permitted to provide long distance services until the U S West local exchange operations satisfy the Section 271 requirements.

throughout the U.S. (§ 35). I demonstrated that no carrier other than AT&T, MCI WorldCom and Sprint served more than 55% of the LATAs in the country or more than 81% of the U.S. population. Dr. Kelley and Mr. O'Dwyer do not dispute my analysis. Indeed, they say that looking at the new entrants that were addressed in my declaration, their results were similar (§ 21). Thus, the merging parties agree that there is no single firm other than the Big Three that serves more than about half of the LATAs in the country or 80% of the population.

19. Dr. Kelley and Mr. O'Dwyer seek to avoid the implications of my analysis by pointing to the existence of smaller, regional carriers who, they claim, could “fill in the holes” of the networks of the larger emerging carriers. The carriers that Kelley and O'Dwyer include in their analysis typically have limited regional footprints and far fewer route miles than those included in my tables. For example, AEP operates in Virginia, West Virginia and part of Ohio; Caprock in parts of Texas. Others, such as ENRON, McLeod, PathNet, have deployed facilities on only a limited basis. Although Dr. Kelley and Mr. O'Dwyer correctly note the existence of a number of smaller, regional networks and utility-operated networks, the implication they draw from the existence of these networks – that the merger will not have an adverse effect on wholesale competition – is incorrect.

20. First, Dr. Kelley and Mr. O'Dwyer inherently assume that smaller regional and utility networks are equal in competitive significance to the major networks in the areas where they operate. Such an assumption is not reasonable. For example, an area served by the Big Three and two regional networks (which would still have four carriers after the proposed merger) could still face a substantial reduction in competition if there

are differences in the nature of the services offered by the remaining Big Two and regional networks. The smaller networks simply may not be capable of offering the full range of services offered by the larger carriers. For example, I understand that the Big Three tend to offer a level of redundancy and backup capabilities that smaller regional carriers are not likely to offer. Certainly, Dr. Kelley and Mr. O'Dwyer do not demonstrate that these smaller networks offer the full range of services offered by the Big Three.

21. Second, the costs resellers would incur in dealing with multiple regional carriers are far greater than the costs that would be incurred in dealing with a single nation-wide firm. This is true with respect to the greater transaction costs in dealing with multiple networks, the loss of volume discounts that would be available from a single network, and the increased interoperability issues inherent in integrating multiple networks, particularly with respect to data services.

22. These problems inherent in piecing a network together from multiple different sources explain why the emerging carriers themselves appear to look for a single (or at least primary) source of supply to complete their networks. It is my understanding, for example, that Williams Communications, an emerging carrier that SBC contracts with, uses Sprint for most of the "off net" facilities it needs to provide service throughout the country for customers like SBC.

23. Dr. Kelley and Mr. O'Dwyer do not dispute that the proposed merger differs substantially from the MCI/WorldCom transaction. This proposed merger combines two of only three ubiquitous national networks. My first declaration notes (§ 39) that at the time of its merger with MCI, WorldCom did not have ubiquitous coverage and was

comparable in scope to scope of the larger new entrants. Thus, the MCI /WorldCom merger did not eliminate one of a small number of firms with ubiquitous nation-wide coverage. To the contrary, it only eliminated one "second tier" network while leaving several other comparable networks in place. This merger, on the other hand, would reduce the number of interexchange carriers operating ubiquitous nationwide networks to two.

24. Thus, I do not agree that the numerous smaller regional networks are an adequate substitute for one of the "Big Three" networks. The merger is likely to increase the costs the emerging carriers seeking to provide nation-wide service will incur in procuring a nation-wide footprint. These higher costs will lead to higher consumer prices and a reduction in long distance competition.

I declare, under penalty of perjury, that the foregoing is true and correct to the best of my knowledge and belief.

May 10, 2000
Date

J. A. Hausman
Jerry A. Hausman

In the Matter of Application of
MCIWorldCom Inc., and Sprint
Corporation for Transfer of Control of
Sprint Corporation to MCIWorldCom,
Inc.

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2. My professional interests have centered on regulation and strategic decision making of corporations in the energy, transportation, and communications industries. I have authored numerous journal articles and seventeen books on these topics, including most recently *The Failure of Antitrust and Regulation to Establish Competition in Long-Distance Telephone Service* (AEI Press and MIT Press, 1996). In addition, I have served on the editorial boards of several journals and was the founding editor of the *Bell Journal of Economics and Management Science*. The Supreme Court of the United States has

referenced my writings on regulation in four cases, including, most recently, *AT&T Corporation, et al. v. Iowa Utilities Board, et al.*,⁵ and lower federal courts have referred to them in more than twenty cases.

3. A part of my professional career has been devoted to working in government on policies affecting regulatory activities. During the Ford Administration, I was a member of the President's Council of Economic Advisers and served as co-chair of the Presidential Task Force on Regulatory Reform. President Carter appointed me to the Council of the Administrative Conference of the United States, and President Reagan appointed me as Chair of the regulatory reform subcommittee of the President's National Productivity Advisory Committee. My public policy work has also included fellowships at the Brookings Institution and the American Enterprise Institute, where I now serve as co-chairman of its Telecommunications Deregulation Project.

4. During 1978-1982, as a consultant to AT&T, I analyzed that company's pricing strategies in regulated local exchange and long-distance service markets subject to competitive entry; these studies formed the basis for defense testimony in the Justice Department's antitrust case against AT&T.⁶ In the early 1980s, I conducted research under grants from the John M. Olin Foundation on the effects of antitrust divestiture on the competitiveness of long-distance services.⁷ Between 1991 and 1992, I participated on the

⁵ See *AT&T Corporation, et al. v. Iowa Utilities Board, et al.*, No. 97-826 (U.S. Jan. 25, 1999); *Public Service Commission of the State of New York v. Mid-Louisiana Gas Co., et al.*, 463 U.S. 319 (1983); *FPC v. Texaco, Inc.*, 417 U.S. 380 (1974); *Mobil Oil Corp. v. FPC*, 417 U.S. 283 (1974).

⁶ See generally *U.S. v. AT&T Co.*, 552 F.Supp. 131 (D.D.C. 1982).

⁷ See Paul W. MacAvoy and Kenneth Robinson (1983), *Winning by Losing: The AT&T Settlement and Its Impact on Telecommunications*, 1 YALE JOURNAL OF REGULATION; Paul

National Academy of Science Panel on the Government's Role in Civilian Technology. Throughout the 1990s, I have submitted testimony on telecommunications regulation and pricing in eleven proceedings before a number of venues, including the United States House of Representatives, the Federal Communications Commission, several state regulatory agencies, and the Canadian Radio-Telecommunications Commission.

5. In this proceeding, I have been asked to address the question of whether the proposed merger of MCIWorldCom and Sprint would be "in the public interest." My findings and the analysis providing the foundation for these findings are provided in Section I. Section II deals with market definition issues and provides estimates of supplier concentration in relevant markets. Section III sets forth a theory of changes in competitiveness of long-distance markets over time and summarizes empirical tests of that theory. (A more detailed discussion of the empirical results of that examination appears in the Appendix.) Section IV examines the proposed merger's likely effects on long-distance prices based on extension of the model and ascertains how those price changes will affect the public interest. Conclusions are presented in Section V.

I. INTRODUCTION AND SUMMARY OF FINDINGS

6. The proposed \$129 billion merger of MCIWorldCom and Sprint would combine the second- and third-largest, facilities-based carriers of interLATA long-distance services in the United States. Clearly, a merger of this magnitude has "public interest" implications. My analysis of whether the proposed merger is in the public interest begins

W. MacAvoy and Kenneth Robinson (1985), *Losing by Judicial Policymaking: The First Year of the AT&T Divestiture*, 2 YALE JOURNAL OF REGULATION.

with estimating seller concentration within the relevant domestic markets. High structural concentration dominates these markets. In this analysis I consider the effects of merging two of the “big three” of AT&T, MCIWorldCom, and Sprint, given two market settings. The first assumes that these carriers continue their current behavior with regard to setting prices, while the second assumes instead that the carriers act non-cooperatively or unilaterally with regard to pricing.

7. In my analysis, both market settings are analyzed on the assumption that long-distance carriers’ service offerings are not highly differentiated. My understanding is that B&B reject the differentiated products analysis of the long-distance industry that served as the basis of Professor Hausman’s analysis of the proposed merger. I understand that Professor Hausman will be responding to the assertions made by B&B. My analysis does not depend upon the assumption that the long-distance service offerings of the major carriers are significantly differentiated, and the B&B criticisms thus do not apply to this Declaration.

8. Seller concentration is one determinant of the service supplier price-cost margin, which is the primary measure of competitiveness. I derive price-cost margins for MCIWorldCom, Sprint, and AT&T by estimating prices and marginal costs over time for various services of each of these carriers. It can be shown that their price-cost margins have been rising or remaining constant over the past decade; at the same time, however, it can also be shown that seller concentration has steadily fallen. These two trends, taken together, are inconsistent with the notion that the relationship among these carriers has been becoming more competitive over time. Indeed, as discussed below, this situation can only have taken place if increasingly more effective tacit collusion among market

participants has generated higher prices – that is, if competition in the marketplace has been declining.⁸

9. As is shown in Table One, I consider two scenarios involving the proposed merger, involving different competitive/non-competitive interactions among firms entering and remaining in the two national markets.

- *Scenario One:* Incumbent long-distance carriers continue the current level of tacit collusion; and
- *Scenario Two:* Incumbent long-distance carriers behave non-cooperatively or unilaterally⁹ (as Cournot competitors).

Table One summarizes estimates of consumer welfare effects likely to result from the proposed merger under each of the scenarios. The process by which these figures are generated is discussed more fully throughout the remainder of this Declaration.¹⁰

⁸ MCIWorldCom's expert witness A. Daniel Kelley has stated in defending the merger that "[p]rice-cost margins are also a useful measure of actual market power." Reply Testimony of A. Daniel Kelley at 8, Docket No. UT-991991 (Wash. U.T.C. Apr. 21, 2000).

⁹ I use the terms "non-cooperative," "non-collusive," and "unilateral" interchangeably in this Declaration.

¹⁰ All of the quantitative welfare estimates in this Declaration pertain to U.S. consumers making domestic, long-distance calls. I lack the necessary price and quantity data to calculate the welfare effects of the proposed merger in international markets in which U.S. consumers place international calls.

TABLE ONE
CONSUMER WELFARE LOSSES FROM
MCIWORLDCom/SPRINT MERGER

	Incumbents Tacitly Cooperate in Pricing	All Carriers Price Non-Cooperatively
<u>Single Year Consumer Loss:</u>	\$6.1 billion	\$2.1 billion
<u>Cumulative (Present Value) of Consumer Loss Over All Years:</u>	\$40.3 billion	\$14.3 billion
Note: The present value is in perpetuity with annual consumer losses discounted at fifteen percent per annum.		

II. COMPETITION IN LONG-DISTANCE MARKETS

A. MARKET DEFINITION

10. In order to assess the anticompetitive effects of a merger, the markets in which relevant firms interact must first be defined. In its prior evaluation of the merger of MCI and WorldCom, the Commission defined two domestic and three international markets. The domestic product markets were (1) residential and small business customers (“mass market”) and (2) medium-sized and large business customers (“larger business market”). The geographic market for both products was the entire United States.¹¹ The international product markets were (1) mass market, (2) larger business market, and (3)

¹¹ Application of WorldCom, Inc. and MCI Communications Corporation for Transfer and Control of MCI Communications Corporation to WorldCom, Inc. at ¶ 24, CC Dkt. No. 97-211 (F.C.C.) Sept. 14, 1998 (hereinafter “MCIWorldCom Application”).

transport capacity market.¹² The geographic markets for the first two products were country-pair routes and for the third product Atlantic, Pacific, and Caribbean/Latin America.¹³

11. In terms of carriers' service offerings, the domestic mass market consists primarily of standard and discount MTS for both residence and small business subscribers. Customers demanding these service offerings will not likely switch to such other services as outbound wide area telecommunications service ("WATS"), inbound WATS, and Combined Services. The basic characteristics of services included in the mass market and the large business market are described below.

- *Message Toll Service:* purchased by residential and small business consumers on the basis of charges per minute for single calls.
- *Outbound WATS:* services by which business customers place long-distance voice or data calls using either switched or dedicated access (and billing is based on a bulk rather than an individual call basis).
- *Inbound WATS (800) Service:* business customers receive and pay for long-distance voice or data calls using either switched or dedicated access on bulk billing plans.
- *Combined Services:* inbound/outbound voice services that are alternative plans to WATS and standard inbound service for switched and dedicated access.

The larger business market consists of outbound and inbound WATS and a much larger percentage of Combined Services. Two conceptual tests support the two-part division of markets: (1) customers purchasing MTS services are unlikely to switch to WATS or network services as the quality and quantity of services are not consistent with most

¹² MCIWorldCom Application, ¶ 79.

¹³ MCIWorldCom Application, ¶¶ 84 and 123.

household demands; and (2) business customers that qualify for large service discounts do not consider the mass market offerings as a substitute. Furthermore, price-cost margins are not the same, nor do they differ by the cost of arbitrage so that buyers in the large business market cannot resell in the mass market to provide the same price behavior.

12. The domestic mass market and larger business markets are national in geographic scale. When one considers that the geographic extent of a market is defined to be the area within which prices at points of sale tend to equality (after taking account of transportation costs),¹⁴ then it becomes apparent that interLATA calls of one type or the other within the United States constitute a market. As the Commission recently concluded, “in general, interstate, long-distance calling [is] a single national market unless there is credible evidence indicating that there is or could be a lack of competition in a particular point-to-point market.”¹⁵ Hereafter I adopt these definitions of markets for my analyses of market structure and the competitiveness of carrier behavior.

B. STRUCTURAL CHARACTERISTICS OF THE TWO NATIONAL MARKETS

13. Before considering in detail the current structure of the mass market and the larger business market, it is worth examining from a somewhat broader perspective the changes that have occurred since the AT&T divestiture in 1984. At the time of the Bell

¹⁴ See Marshall, A., *PRINCIPLES OF ECONOMICS* (variorum ed., 1961), p. 325; Cournot, A. (1838), *RECHERCHES SUR LES PRINCIPES MATHÉMATIQUES DE LA THÉORIE DES RICHESSES*, Paris.

¹⁵ Second Report and Order in CC Docket No. 96-149 and Third Report and Order in CC Docket No. 96-61 at ¶ 66, *Regulatory Treatment of LEC Provision of Interexchange Services Originating in the LEC's Local Exchange Area*, CC Dkt. No. 96-149 (F.C.C. Apr. 18, 1997).

System breakup, AT&T generated fully 90 percent of all long-distance revenues while MCI and Sprint trailed behind with approximately five percent and three percent, respectively. In the first six years following divestiture, AT&T's share decreased by 25 percentage points. Nearly two-thirds of that loss was matched by gains for MCI and Sprint, with those carriers exhibiting share gains of nine percent and seven percentage points, respectively. The remainder was distributed among a large number of specialized service providers, both facilities-based and resellers, many of whose systems or services in some part depended on the large three providers.

14. By the end of 1990, however, this shift of shares each year from the largest to the next two carriers was reduced in magnitude. Share growth by MCI and Sprint was not only reduced, they became less responsible for continuing attrition in AT&T's leading share. In 1990, Sprint had ten percent of interLATA revenues, and it has remained at this level ever since. MCI has not been quite as stagnant; slightly less than three of the four points lost by AT&T from 1990 to 1992 was matched by MCI share gain. Between 1992 and 1994, MCI's share was at a plateau of 17 to 18 percent, but in 1995, it increased from 17 to 20 percent of long-distance revenues, matching closely AT&T's loss of four points. (See Table Two.) In the last half of the 1990s, until 1998, when MCI merged with WorldCom to form MCIWorldCom, its share stayed at approximately 20 percent. Over this same period, 1990 to 1998, AT&T gave up 24 percentage points of domestic interLATA revenues, more than half of which went to facilities-based carriers and resellers with less than one percent each; thus, less than half of its share loss went to MCI and Sprint (see Table Two for year-to-year details). (These estimates of shares are for the mass

and larger business markets combined, given that initially, a virtual monopoly, AT&T, provided the same level of control of supply over services to both markets.)

15. Table Two includes estimates of the Herfindahl-Hirschman Index (“HHI”), equal to the sum of the squared percentage shares for combined long-distance services based on the total toll revenue of only the largest three service providers.¹⁶ Declining HHI values for a national long distance market from AT&T, MCIWorldCom, and Sprint mark this entire period. The rate of decline has not been constant; indeed, the HHI exhibits a pattern of steep decline from 1984 to 1990, with a reduction of 3,663, but a more gradual decline since then, with a reduction of 2,163 in the past nine years.

16. In 1998, and for the first year since the breakup of the Bell System, the HHI of the top three long-distance carriers leveled off. That year, the acquisition of MCI by WorldCom combined those two companies’ shares of interLATA revenue,¹⁷ resulting in a

¹⁶ In some tables and figures in this Declaration, the HHI is reported in decimal form so that it can be plotted against the price-cost margin, which also ranges from 0 to 1, and so that the equivalent number of equal-sized firms can be found by taking the reciprocal of the HHI. These HHIs can be put in the form used in the HORIZONTAL MERGER GUIDELINES by multiplying the values by 10,000. For convenience, the HHIs are sometimes reported in that form as well.

¹⁷ In 1989 (the first year for which the FCC provides revenue share data for the carrier), the company that was eventually to become WorldCom possessed a rather insignificant 0.2 percent share of interLATA market revenues. Since that time, the carrier has grown, elevating its share to just under 7 percent in 1997. This growth has come primarily through the acquisition of such other niche players as LDDS, Wiltel, and MFS Intelenet. The share growth of each of the niche players acquired by WorldCom, and thus the share growth of WorldCom itself, has (until that carrier’s acquisition of MCI in 1998) come at the expense of AT&T. AT&T’s share has declined by 23 percentage points from 1989 to 1997. Over the same period, the shares of MCI and Sprint increased by six percent and two percent, respectively, and they have remained stable over the last few years. It is apparent that, until 1998, AT&T has been the source of share gains by WorldCom. See Federal Communications Commission, PRELIMINARY STATISTICS OF COMMUNICATION COMMON CARRIERS, Table 1.4 (1998 ed. 1999).

share of 25 percent. That merger appears to have halted, for the first time since divestiture, the trend of decreasing concentration in the top tier of the interLATA market.

TABLE TWO
AT&T, MCIWORLDCom, AND SPRINT SHARES (PERCENT)
OF TOTAL TOLL REVENUE IN THE UNITED STATES.

Year	AT&T	MCIWorldCom	Sprint	HHI ^{1/}	
1984	91	5	3	0.83	8,315
1985	87	6	4	0.76	7,621
1986	82	8	5	0.68	6,813
1987	79	10	6	0.64	6,377
1988	75	11	7	0.58	5,795
1989	68	13	8	0.49	4,857
1990	66	14	10	0.47	4,652
1991	64	15	10	0.44	4,421
1992	61	17	10	0.41	4,110
1993	59	18	10	0.39	3,905
1994	56	17	10	0.35	3,525
1995	52	20	10	0.32	3,204
1996	48	20	10	0.28	2,804
1997	45	19	10	0.25	2,486
1998	42	25	10	0.25	2,489

Source: Federal Communications Commission, *Preliminary Statistics of Communication Common Carriers*, Table 1.4 (1998 ed. 1999). HHI calculated using the total toll revenue of the three carriers shown in the table only. Prior to 1998, the market share statistics for MCIWorldCom pertain to MCI.

^{1/} The HHI statistic is shown in both the form used for shares reported in percentage terms as well as the form used in the HORIZONTAL MERGER GUIDELINES.

17. A conservative interpretation of these changes in revenue shares is that, in the first few years following divestiture, MCI and Sprint were able to gain market share significantly at the expense of AT&T, but after 1990 they ceased to do so. MCI continued to make very limited gains against the market leader, and its most recent gains were made by merger with the WorldCom “collection” of previously acquired smaller companies.

Sprint's market share remained stable, scarcely changing in seven years. The continued erosion of AT&T's share has come from losing revenues to fringe firms rather than to the other leading carriers.

18. In a competitive market, share changes result from efforts of one or more carriers seeking to expand at the expense of other carriers. The relative stability in the 1990s of MCIWorldCom and Sprint market shares, coupled with the fact that AT&T losses were diffuse, suggest that there was limited effort by MCIWorldCom and Sprint to take shares from AT&T by the use of traditional competitive initiatives.

19. The stability of these revenue shares can be contrasted with the data on customer churn reported by B&B. "Churn," as customarily used, refers to the percentage of all interexchange customers or revenues from customers that change carriers in a defined period. As discussed below, B&B use residential customers' bills to analyze the willingness of mass-market customers to use other carriers. Their primary conclusion is that the sample data suggest customers would switch to alternative carriers in response to a price increase caused by the proposed merger. Yet B&B do not measure churn as the term is customarily used. To the contrary, they appear to measure only the extent to which consumers may use a fringe or dial-around service in a particular month. Indeed, B&B note that "the proportion of households that have used emerging carriers at some time substantially exceeds the proportion that is using them at any given time."¹⁸ But this just means that many customers who have tried service from an emerging carrier later switched back to AT&T, MCIWorldCom, or Sprint. This fact undermines B&B's assertion that

¹⁸ Besen and Brenner Declaration, p. 27.

customers switching to emerging carriers would defeat a price increase caused by the proposed merger.

20. B&B further assert that high customer turnover rates force carriers to “compete to attract other customers, or win back the customers they have lost, in order to maintain or increase their market share.”¹⁹ But if the competition for mass-market customers were as intense as that suggested by B&B, then price-cost margins would have been reduced to competitive levels. Instead, mass-market price-cost margins have not fallen in recent years (see Figures Three and Four and the accompanying discussion). This supports the conclusion that there was limited effort by AT&T, MCIWorldCom, and Sprint to take shares from each other by the use of traditional competitive initiatives, e.g., lower prices resulting in lower margins.

21. ***Supplier Concentration in the Mass Market and the Larger Business Market in 1998.*** Revenue shares of long-distance carriers in the mass market in 1998 are shown in the first column of Table Three.²⁰ The resulting HHI, with contributing squared percentages for each company, are shown in the second (“Pre-Merger”) column. The mass market is highly concentrated, with a pre-merger HHI of 3,945, which corresponds to approximately 2.5 equal-sized firms (*i.e.*, $HHI = 1/n$ for “n” equal-sized firms). Calculating the change in squared shares from the merger, as in the last column, the structural effect of the proposed merger would be to increase the HHI to 4,163, or to the

¹⁹ *Id.* at p. 25 (footnote omitted).

²⁰ The revenue shares in Table Three pertain to residential services. Revenue shares for small business customers are not publicly available. For purposes of this Declaration, I assume that revenue shares for small business customers can be approximated by those for residential customers. For illustrative purposes, the 1998 revenue shares of MCI and WorldCom are combined in Tables Three to Six reflecting their current status, although their merger was not consummated until 1999.

level consistent with approximately 2.4 equal-sized firms. In terms of the HHI criteria presented in the HORIZONTAL MERGER GUIDELINES, the merger would cause an increase of 218 points and result in a post-merger HHI of 4,163. This change in concentration exceeds the GUIDELINES' threshold of 100 points for horizontal mergers resulting in a post-merger HHI above 1,800.

TABLE THREE
MASS MARKET REVENUE SHARES AND
MARKET CONCENTRATION

Carrier	1998 Market Share	Pre-Merger HHI	Post-Merger HHI	Change in HHI
MCIWorldCom	0.170	0.0289	0.0549	
Sprint	0.064	0.0041	-	
AT&T	0.599	0.3589	0.3589	
Frontier	0.006	0.0000	0.0000	
Qwest/LCI	0.015	0.0002	0.0002	
Cable & Wireless USA	0.001	0.0000	0.0000	
Excel/Teleglobe	0.037	0.0014	0.0014	
Other IXC's	0.079	0.0007	0.0007	
LECs	0.028	0.0002	0.0002	
Total	1.000	0.3945	0.4163	0.0218

Source: Dataquest, Public Telecommunications Services North America Market Share and Forecast, 1999.

Note: Market shares of firms in the Other IXC and LEC categories are assumed to be approximately one percent.

22. In response to the highly concentrated nature of the mass market, B&B purport to offer data on "customer churn." They conclude that data on the willingness of residential customers to switch among alternative carriers demonstrate that emerging carriers could increase their market share very substantially in response to post-merger price increases. However, as shown below, current prices charged by AT&T, MCIWorldCom, and Sprint to mass market customers substantially exceed marginal cost. This marketplace reality has not resulted in large-scale substitution by residential and small business customers to emerging carriers.

23. With respect to the larger business market, Table Four presents the market concentration statistics for 1998. This business market is substantially less concentrated than the mass market; the pre-merger HHI of 2,465 implies the presence of the equivalent of approximately 4.1 equal-sized firms. Calculating the change in shares from the proposed merger, in both markets, the resulting HHIs are shown in the last column.

TABLE FOUR
LARGER BUSINESS MARKET SHARES

Carrier	1998 Market Share	Pre-Merger HHI	Post-Merger HHI	Change in HHI
MCIWorldCom	0.276	0.0760	0.1500	
Sprint	0.112	0.0125	-	
AT&T	0.394	0.1555	0.1555	
Frontier	0.016	0.0002	0.0002	
Qwest/LCI	0.021	0.0004	0.0004	
Cable & Wireless USA	0.016	0.0002	0.0002	
Excel/Teleglobe	0.005	0.0000	0.0000	
Other IXCs	0.152	0.0015	0.0015	
LECs	0.009	0.0001	0.0001	
Total	1.000	0.2465	0.3080	0.0615

Source: Dataquest, Public Telecommunications Services North America Market Share and Forecast, 1999.

Note: Market shares of firms in the Other IXC and LEC categories are assumed to be approximately one percent.

The increase in concentration for services to larger business customers that would be caused by the proposed merger exceeds that observed for the mass market, since the post-merger HHI increases by 615 points to a value of 3,080, or the equivalent of approximately 3.3 equal-sized firms. The three largest carriers collectively account for a substantial percentage of all sales, in this case 78.2 percent, but AT&T is relatively smaller. But after the proposed merger, AT&T would be even smaller; it and MCIWorldCom/Sprint would be the same relative size, with 39.4 percent and 38.8 percent shares, respectively. In terms of the HORIZONTAL MERGER GUIDELINES, the merger would cause an increase of 615 points and result in a post-merger HHI of 3,080. This change in concentration again